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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/348,502	07/07/1999	IOANA DONESCU	1807.0924	5329

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EXAMINER

BHATNAGAR, ANAND P

ART UNIT	PAPER NUMBER
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2623

16

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/348,502

Applicant(s)

DONESCU, IOANA

Examiner

Anand Bhatnagar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-7, and 9-84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-24, 26, 28, 30, 32, 34, 36, 38, 83 and 84 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6, 7, 9, 10, 12, 13, 25, 27, 29, 31, 33, 35, 37, 81, and 82 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/12/03 (paper #14) has been entered.

Response to Arguments

2. Applicant's amendment filed on 12/12/03 (paper #15) has been entered and made of record.
3. Applicant has amended claims 1, 7, 14, and 19. Claims 2 and 8 have been previously cancelled. Claims 39-80 have been previously withdrawn from consideration. Presently, claims 1, 3-7, and 9-84 are pending.
4. Examiner withdraws the objection to claims 19-24, 26, 28, 30, 32, 34, 36, and 38 since claim 19 has been amended.
5. Applicant's arguments filed on 12/12/03 have been fully considered but they are not persuasive. Applicant has amended claims 1, 7, 14, and 19 to include new limitations which are "multi-resolution spectral breakdown (E1) of the digital data at a level (d) dependent on image size and determined so that a lowest frequency sub-band has a number (n) of components of lowest frequency

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comprised between 8x8 and 32x32" and "choice (E3) of a subset of the components consisting of only components in the lowest frequency sub-band". Applicant argues that Manjunath does not disclose these newly added features. Examiner disagrees. Manjunath discloses to decompose an image into different frequency bands (LL, LH, HL, and HH) to embed data. Manjunath further teaches that a watermark of a particular size can fit into a specific size image (Manjunath et al.; col. 3 lines 18-22). Manjunath also teaches wherein the image is broken down into 8x8 coefficients (Manjunath et al.; col. 15 lines 1-5). It is obvious to one skilled in the art to know the characteristics of an image, such as texture, color content, spatial data, frequency characteristics, image size, etc. in order to know where and what size watermark can be embedded into an image without it being detected. If the image is broken down as 8x8 regions means that all the frequencies, including the low frequencies, of the image are broken down as 8x8.

Applicant also argues, in paper #15 bottom of page 26 that Manjunath does not disclose or suggest "that only components in the lowest frequency sub-band are used for embedding". This feature is nowhere in the claim language. Applicant only extracts components only in the lowest frequency for embedding data but nowhere does it state in the claim language that only the lowest frequency sub-band is used for embedding.

Examiner refers to the rejection below.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 6, 7, 9, 12, 13, 25, 81, and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1).

Regarding claims 1 and 7: Method of inserting a supplementary information item, such as a secret watermark, in digital data (col. 1 lines 36-40), characterized in that it includes the following steps:

- multi-resolution spectral breakdown of the digital data (fig. 1, fig. 6, col. 6 lines 28-34 and 51-56, where the image is broken down into frequency bands) of the digital data at a level dependent on the image size and determined so that a lowest frequency sub-band has a number (n) of lowest frequency comprised between 8x8 and 32x32 (col. 3 lines 18-22, col. 7 lines 26-30, and col. 16 lines 45-52);

- extraction of the components of the lowest frequency sub-band (col. 6 lines 25-34 and 51-56);

- modulation of the components of said subset in order to insert the supplementary information (col. 7 lines 1-18 and 29-31, where the coefficients are scaled by alpha) ; and

- reverse multi-resolution spectral recombination of the watermarked digital data (col. 7 lines 22-25, where the signal is combined to give a watermarked image).

As for the following limitation of: choice of a subset of the components consisting of only components in the lowest frequency subband.

Manjunath et al. discloses to embed corresponding part of a watermark signal into its corresponding part of the image signal based on frequency. Manjunath et al. does not teach to specifically choose only components in the lowest frequency for embedding data. Bender et al. teaches to place a logo signature into only the low frequency part of a image signal (Bender et al.; col. 6 lines 26-29, to embed data into only the low frequency region means that the signal has to be broken down into its frequency components and the low frequency components chosen for data embedding). It would have been obvious to one skilled in the art to combine the teaching of Bender et al. to that of Manjunath et al. because they are analogous in embedding data into the frequency regions of an image signal. One in the art would have been motivated to incorporate the teaching of Bender et al. to that of Manjunath et al. to have a system which will embed hidden data into only the low frequency part of an image signal, which will undergo lossy compression, to make it robust to compression (Bender et al.; col. 6 lines 29-33).

Regarding claims 3 and 9: Manjunath et al. further discloses an insertion method characterized in that, at the spectral breakdown step, the spectral

breakdown is performed by a discrete wavelet transformation and, at the extraction step, the components of the approximation sub-band are chosen (fig. 6, col. 6 lines 35-44, col. 18 lines 48-60, and col. 20 lines 59-67, where only a limited number of coefficients are chosen in the frequency band or number of coefficients are limited by zeroing some of the coefficients in the bands).

Regarding claims 6 and 12: Manjunath et al. further discloses an insertion method characterized in that, at the choosing step, the subset of components is chosen according to a pseudo-random function initialized by a digital signal representing a confidential key associated with the supplementary information to be inserted (col. 21 lines 30-50, where an encryption key is used to pseudo randomly change the coefficients to embed).

Regarding claim 13: Insertion device characterized in that the means of spectral breakdown, extraction, choosing, modulation and spectral recomposition are incorporated in:

- a microprocessor ;
- a read-only memory containing a program for inserting a supplementary information item; and
- a random access memory containing registers adapted to record variables modified during the running of the program.

(col. 3 lines 14-30 and col. 8 lines 1-15; It is inherent that the system of Manjunath et al. is composed of a computer which contains a CPU, RAM, and ROM memories, this system receives an image from a host "computer" and

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computations are performed on the image to break it down embed data and reform they image with data embedded).

Regarding claim 25: Manjunath et al. discloses a digital signal processing apparatus, characterized in that it has an insertion device (col. 6 lines 25-35 and 45-50).

Regarding claims 81 and 82: Insertion device further comprising a step of transformation using a Discrete Cosine Transformation of the components of the lowest frequency (fig. 15 and col. 15 lines 1-5, where a DCT is used to breakdown the signal into a 8x8).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of view of Cooklev (U.S. patent 6,359,998).

Regarding claims 4 and 10: Insertion method characterized in that, at the spectral breakdown step, the digital data are broken down iteratively into an

approximation version corresponding to a lowpass filtering and a sub-sampling of the digital data or of a previous approximation version, and into a detail version corresponding to the subtraction of the approximation version from the digital data or from said previous approximation version, and, at the extraction step, the components of the approximation version are chosen.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to perform a lowpass filtering and subsampling of the image data. Cooklev teaches to perform a low pass filtering and subsampling on an image (Cooklev; col. 11 lines 14-20) for data to be embedded. It would have been obvious to one skilled in the art for one to combine the teaching of Cooklev to that of Manjunath et al. because they are analogous in embedding data into an image. One in the art would have been motivated to incorporate the low passfiltering and subsampling of Cooklev into the watermarking device of Manjunath et al. giving a watermarking system which will make it less prone to being attacked by limiting the frequencies that are used from the whole spectrum of frequencies from the image, which makes it difficult to find where the hidden data is embedded (col. 6 lines 4-8).

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8. Claims 25, 27, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Zeng (U.S. patent 6,373,974).

Regarding claims 27, 29, and 31: Digital photographic apparatus, digital camera, and/or database management system characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device of a database or digital camera "digital photographic apparatus" system. Zeng teaches to have a watermarking system in a digital camera "digital photographic apparatus" as well as a database management (Zeng; col. 11 lines 15-21). It would have been obvious to one skilled in the art to combine the teaching of Zeng to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a digital camera and database management system as thought by Zeng in order to place an authentication mark on the work/product produced for identification.

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9. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Barton (U.S. patent 6,163,842).

Regarding claim 33: Computer, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device on a computer system. Barton teaches to have a watermarking system in a computer (Barton; col. 9 lines 40-50). It would have been obvious to one skilled in the art to combine the teaching of Barton to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a computer system as thought by Barton in order to place an authentication mark on the work/product produced for identification.

10. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Uchida (U.S. patent 6,370,258).

Regarding claim 35: Scanner, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device in a scanner system. Uchida teaches to have a watermarking system in a scanner system (Uchida; col.4 lines 55-65). It would have been obvious to one skilled in the art to combine the teaching of Uchida to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into a scanner system as thought by Uchida in order to place an authentication mark on the work/product produced for identification.

11. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (U.S. patent 6,332,030) and Bender et al. (U.S. patent 6,201,879 B1) in further view of Chen et al. (U.S. patent 6,314,192).

Regarding claim 37: Medical imaging apparatus, and notably an X-ray radiography apparatus, characterized in that it has an insertion device.

Manjunath et al. discloses a watermarking system where the original image is broken down into frequencies using a discrete wavelet transform and a watermark is embedded in the low frequencies. Manjunath et al. does not teach to have this low frequency watermarking/insertion device in a medical apparatus system. Chen et al. teaches to have a watermarking system in a medical

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appartus (Chen et al.; col. 8 lines 43-50). It would have been obvious to one skilled in the art to combine the teaching of Chen et al. to that of Manjunath et al. because they are analogous in watermarking. One in the art would have been motivated to incorporate the watermarking system of Manjunath et al. into the medical apparatus system as thought by Chen et al. in order to place an authentication mark on the work/product produced for identification.

Allowable Subject Matter

12. Claims 14-24, 26, 28, 30, 32, 34, 36, 38, 83, and 84 are allowed.

Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

CONTACT INFORMATION

14. Any inquiry into this communication should be directed to Anand Bhatnagar whose telephone number is 703-306-5914, whose supervisor is Amelia Au whose number is 703-308-6604, group receptionist is 703-305-4700, and group fax is 703-872-9314.

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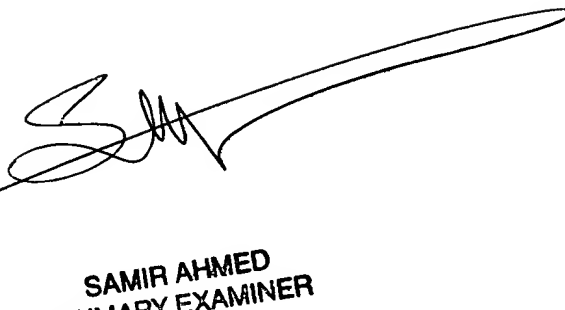
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Anand Bhatnagar

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January 26, 2004

A handwritten signature in black ink, appearing to be 'Samir Ahmed', written over a long horizontal line.

**SAMIR AHMED
PRIMARY EXAMINER**